

9-1
Multiplication and Division
of
Rational Expressions

Simplify:

$$\frac{3y(y+7)}{(y+7)(y^2-9)}$$

$$y \neq -7, \pm 3$$

$$\frac{3y}{(y^2-9)}$$

Simplify:

$$\frac{a^4b - 2a^4}{2a^3 - a^3b}$$

$$a \neq 0$$

$$b \neq 2$$

$$\frac{a^4 \cancel{(b-2)}}{a^3 \cancel{(2-b)} \cdot \cancel{1(-2+b)}} = -a$$

Simplify:

$$\frac{x^2 + 2x - 3}{x^2 - 2x - 15}$$

$$\frac{\cancel{(x+3)}(x-1)}{(x-5)\cancel{(x+3)}}$$

$$\boxed{\frac{x-1}{x-5}}$$

Multiplication and Division

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$$

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{ad}{bc}$$

$$\frac{\cancel{8}x}{\cancel{21}y^3} \cdot \frac{\cancel{7}y^2}{\cancel{16}x^2} = \frac{1}{6x^2y}$$

$$\frac{\cancel{5}a^4c}{\cancel{12}b} \cdot \frac{\cancel{24}bc^2}{\cancel{15}ab^2} = \frac{2ac^3}{3b^2}$$

$$\frac{\cancel{10}ps^2}{\cancel{3}e^2d} \div \frac{\cancel{5}ps}{\cancel{6}c^2d^2} = \frac{4sd}{4ds}$$

$$\frac{a^3 - b^3}{a^2 - b^2} \cdot \frac{(a+b)^2}{a^3 + b^3}$$

$$\frac{\cancel{(a-b)}(a^2 + ab + b^2)}{\cancel{(a+b)}(a-b)} \cdot \frac{\cancel{(a+b)}^2}{\cancel{(a+b)}(a^2 - ab + b^2)}$$

$$= \frac{a^2 + ab + b^2}{a^2 - ab + b^2}$$

$$\frac{k-3}{k+1} \div \frac{k^2 - 4k + 3}{1 - k^2}$$

$$\frac{\cancel{k-3}}{\cancel{k+1}} \cdot \frac{\cancel{(1+k)}(1-k)}{\cancel{(k-3)}(k-1)}$$

$$\boxed{-1}$$

Complex Fraction--rational expression with rational expression in numerator or denominator

$$\frac{\frac{x^2}{(9x^2 - 4y^2)}}{\frac{x^3}{2y - 3x}}$$

$$\frac{x^2}{(3x+2y)(3x-2y)} \cdot \frac{2y-3x}{x^3}$$

$$\frac{1}{-(3x+2y)x}$$

HW
p476
23-39odd